





CHAPTER II

WILDERNESS

Snow became a very powerful design element on this film. Our snow isn't just white—it can be whatever color the narrative demands at any given moment for impact. With this white canvas, we can infuse it with blue, green, magenta or any other hue we choose. I call it the "power of white with light." —Michael Giacomo, art director

The coronation, which should be a magical moment come true, ends in disaster as Elsa's ability to freeze things is exuberantly revealed. She flies into the mountains that loom over Arendelle.

Anna Nilsen (Kristoff) and Sven (Oscar) guide her through the snowy mountains to reach Elsa, physically and emotionally. Although Kristoff is a skilled woodsmen and ice harvester, the enormous Elsa generates defeat even his knowledge of the boreal forests. From the Chinese-influenced thickets that shelter Bunnit to the intricately patterned woods in Shining Breathe, the forests in every Disney film have a unique appearance appropriate to the story. The *Frozen* artists strove to evoke the mountainous wilderness of Norway in scope and detail. Visual development artist Jim Pinn observes: "The landscape, the flowers, the color of the water—everything helps you make the setting feel authentic. You don't want to put Lake Michigan water in a fjord."

But the *Frozen* crew wasn't making a travelogue. The setting had to be as stylized as the characters; it had to help tell the story. The landscape was buried under a layer of snow that Elsa's magic thickened. But that snow didn't be just a monotonous blanket. As art director Michael Glaimo notes, "Snow isn't just white.

"On our field trip, you'd see deep blue shadows cast in the snow because of the sky," Glaimo continues. "At sunset, there might be orange-reds falling onto that snow. These things are magical and stunning by nature. I don't have to do anything."

Production designer David Wombley adds, "The snow gives you something you wouldn't get anywhere else: a sense of the bleakness of the mass. In some sequences, we want to push the bleakness and the scale. In *Lawrence of Arabia*, the sheer emptiness of the desert gave you a beautiful sense of scale. We have the same opportunity with these huge snowscapes."

That sense of scale enables the artist to make Anna and Kristoff feel small, physically as they are emotionally. Finn explains, "If you want to make someone feel small or lonely, you put them in a large space. You can use all that space to make them feel alone in a very desolate place. You're going to have big mountains, big skies, and a lot of space. There are going to be moments in the film where we want the characters to feel they're on their own. There's no castle in the distance, if you see nothing on the horizon, it's scary."

Every tree, rock and snow bank in the forest had to be designed to fit into the highly stylized world of the film. "Mike and I wanted this film to feel designed, a little more thought out," Finn says. "It's fun to do, but it's more work to design shapes, as opposed to just filling in the spaces around a character, it's building a stage for the characters. You place a tree so that it works as a negative in a big positive shape. You're designing for shape, because you have such a large area of white—it involves a little more thinking and not just painting something in every corner of the image."

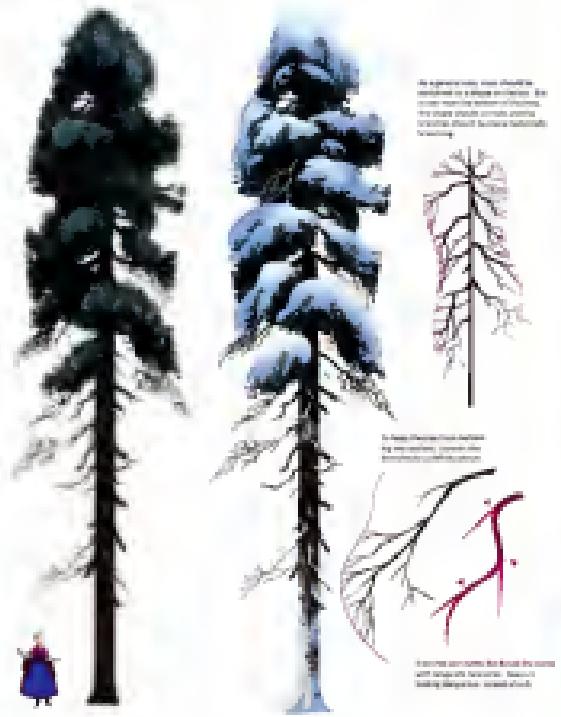
Fairy tales are often environmentally intimate. It is a very rare opportunity to imbue the genre with the kind of scope and scale that *Frozen* has.
—Michael Glaimo, art director







We had a broad variety of trees. Some were more natural and some were very stylized like the trees in the magical landscape. Besides the challenge to make the look believable they had to integrate well with the environments and still be renderable
—Hans-Jörg Klem, look development supervisor



Cary Loftin | Digital





Environment modeling supervisor Joe Krammel, agrees nicely. "This film has technical challenges, and it has artistic challenges. Everything needs to be art directed and sculpted. It's going to add a lot of geometry and a lot of density to every single set, which doubles the work. They're writing a tool called *masses* for us that will procedurally create any kind of tree. If we need a certain kind of branch, they'll write a module for us to make that happen. I'm really excited to play with all."

The demands of creating such a complex environment led various crews to work more closely. Character rigging supervisor Curtis stated nicely, "The effects department provided us with a new representation: when the characters walk through it, they leave footprints. We're also enabling the animators to scrub their animation off to get rendered. The animation will come back with the hair, fur, cloth, and snow rendered, so they can judge how their work is interacting with the environment."

Effects supervisor Dale Meyers adds, "We've had one of our effects animators, Ian Cooley, live up in the layout department. When a shot is conceived, we put in a representation of the effects. The animators get a rough idea of how much snow might be in the scene; they can respond to the weather conditions. Typically we're not involved until after the animation's completed. They may not know there's a really gusty wind blowing, and their characters may not act appropriately. By having our guy up there, they've gotten a better understanding of what's happening in the shot."





jean-Christophe Ponsard/Corbis

Snow is an opportunity, because it's a white canvas. It's a lighter's dream, in that the lighting is the color. The local color is minimal at best in all these snowscapes, so it's all about the lighting. We consider it a blank canvas that allows us to actually paint with light. We're having a lot of fun with that.

—Lisa Kerner, assistant art director



Lisa Kerner/Disney



Bill Schenck | Dept. 1



Bill Schenck | Dept. 1



Jim Fennell | Dept. 1



Jim Fennell | Dept. 1

An essential element in creating a believable snowy landscape is the way it looks and lighting director Michael Kallianpur states, "Snow is a huge challenge for us. We haven't done this amount before in a movie, and making it look believable is not easy. It can easily go from snow to concrete. The subsurface techniques we're developing will give us a feeling of light hitting the snow and traveling through it. As light travels deeper into snow, the red wavelengths get absorbed, so it gets bluer. We want to capture those phenomena."

Ron notes, "Depending on the time of year, the sun only goes so high in the sky. We want to make it seem like winter, so the sun will probably lay pretty low on the horizon. Whenever the story and emotion requires, we'll do, even if we have to cheat."

In earth science classes, students learn about albedo, the amount of sunlight snow reflects; skiers and snowboarders know about it firsthand. Kallianpur continues, "We don't want audiences to have to wear sunglasses because of how much snow we have in a frame. But if snow doesn't have a certain level of brightness, it starts going grey and looking dirty. All of our snow is going to be beautiful and clean."

"During the day, snow can be very high contrast, but we have to give the audience time to rest their eyes," concludes lighting supervisor Jason MacLeod. "We have night scenes; we have interiors. On that, we had see white against the background [in] pretty well. We have the opposite problem: The entire stage will be white to some degree. It'll be a lot of work to keep the audience interested in the characters and not overwhelmed by the backgrounds."

It would be a crime not to celebrate color in the musical format. Since John Lasseter appreciates my color and design sensibilities, he expects me to deliver something in a striking and provocative way.
—Michael Giorno, art director





Strong color and shape innovation was essential for building the design language for *Frozen*.
Michael Glavin | Digital



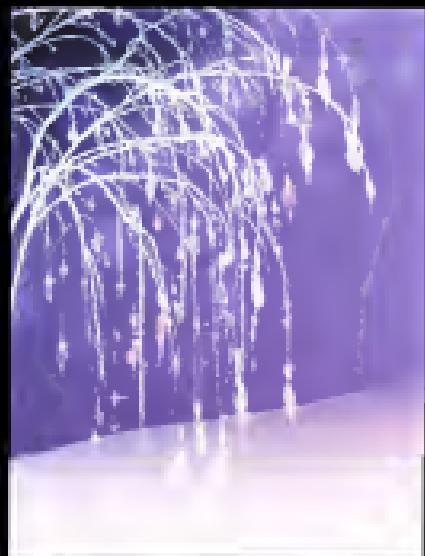
The fully-realized world of No Man's Sky required a blending of graphic design concepts, combined with the very real properties of light, shadow, texture, and form.

©2016 Digital



The scope of the landscape is enormous. There are entire mountain ranges. Lewis Siegel had the idea to build a "Frost Modifies," which has been really useful not only for LookDev but also for EFX. With this new technology we were able to frost the entire world and encase everything in ice.

—Hans-Jörg Klein, look development supervisor



COLOR KEYS





Lisa Keene (top)

Lisa Keene has the ability to blend her deep understanding of the physical laws of nature with the more elusive qualities of the fairy-tale world. Her color keys in *Frozen* provided a solid framework for our lighting department. The keys are both grounding and transporting—exactly what is needed for an elegant Disney fairy tale.

—Michael Giacomo, art director



Kristoff

For decades, the princes were the most difficult and least interesting characters in animated fairy tales. Frozen has a partner for Anna; he's not a prince and he's even less than charming, but he is a hero.

Unlike the blandly elegant princes in many animated fairy tales, Kristoff is tall, powerful, and scruffy. An outdoorsman and a force, he's a man of few words and fewer friends, except for Sven, his reindeer/pack animal/best bud.

"Kristoff's a tough, quiet, rugged ice harvester. He doesn't relate to humans as much as he does animals," says animator Tony Simeone. "It's going to portray his emotions and the right protest without being too wimpy. He's a man of few words. He'll probably be more efficient in his movements, using just enough strength to get the job done. Underplayed."

"Kristoff represents that code of being a man, being very tough, but there's a softer inner core," adds head of story Paul Briggs. "He built this mask and he's worn it for so long, he almost believes in it. Like Elsa, he's holding something Anna is going to push him to lower that mask. We had to know who Anna was before we could so figure out who we needed Kristoff to be."

Kristoff's rough-hewn appearance had to contrast with the courtly elegance of Anna and Hans, yet fit into the same visual palette. "Kristoff was tough to get in line with the other characters, because I was channeling live action musicals, which have a real panache; how do we bring that to this inanimate character?" Galdino says reflectively. "We riffed on the traditional costumes of the Sami people, and used some folk-art motifs in his parka, its colors, magenta and indigo, reflect Anna's palette.

"A successful character design entails how a character should behave and act," adds head of animation Luis Di Sisto. "When we first saw Kristoff's design, we felt he might be a bit too elegant, and we had to make it more real. There's a wear pattern on one knee of his pants because he rests on that knee to secure Sven's reins. As animators, we rewrite everything his boots are probably still messy, so when he bends down, he'll bend a certain way that will become a personality trait. The characters should feel like they live in this film. They're not characters from any other movie. They respond to the situations in this film."

Supervising animator Randy Haycock knew this test of a very awkward Kristoff trying to make small talk with Anna. "When you're animating a character, especially a

main character, a boy (or train) I can identify with," he says. "Kristoff really wants to be an ideal guy, but he's very aware that he's not. So he's trying too hard. He belches and takes his hat off and puts it back on. I was always uncomfortable talking to girls, so I got that part of the character."

"I can draw Kristoff putting his hat on and off, but in CG, you have to make this rig able to do that," he continues. "The hat becomes a piece of cloth, and you have to decide how to detach it from his head. These kinda reveal things that they may need to address later on. They can save time by rigging it to do the things in the best."







Ellebyra Lee | Clipart



Ellebyra Lee | Clipart

Sven

To emphasize Kristoff's unkempt appearance, the artists made Sven a more realistic reindeer: a stumpy, unprepossessing animal, unlike the pristine pinto-horses who pull Santa's sleigh in cartoon Christmas specials. "Sven's definitely not regal," says head of animation Uno Di Salvo. "The wear and tear of being out in the wilderness without being brushed leads to the comedy of the character. His brows are very expressive. He doesn't speak, but if he did it would be via his brows."

I didn't know what reindeer really looked like until I got on this movie. I always thought they were the graceful, powerful creatures I saw in the cartoons. I was wrong. I was lied to. My whole childhood!

Chris Williams, story artist



© 2013 Disney





“Come on, Sven! You’re going to have fun!”
said Kristoff, as he and Anna
walked toward the reindeer.



Paul Briggs | Digital



An earlier design of Kratoff's sled. The idea of Kratoff as a reindeer harnesser came relatively late in production, so this sled was remodeled to be pulled by two blocks of ice.

Craig Loftus | Digital

Olaf

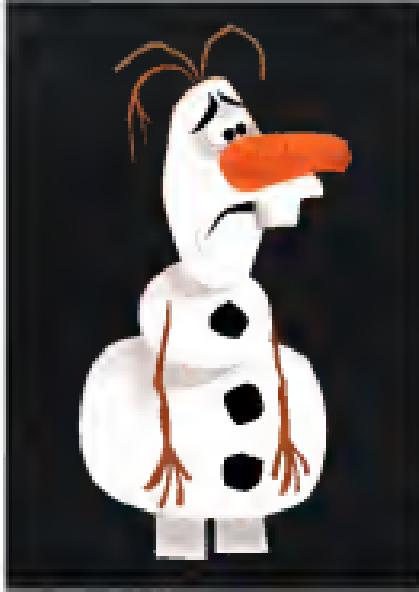


During their trek through the ice and snow, Anna and Kristoff encounter Elsa's formidable snow-guard, and a very different snowman, the ingenuous comic relief, Olaf.

"Olaf basically is an exercise in truth in materials," explains head of animation Lindy Dr Salter. "At first, we were treating his stick arms and inserting his face too much. He felt like a rubbery cartoon character. Then we thought, 'If snow moved like snow, how would it move? If a character has wooden arms, why not use that limitation as entertainment?' Now you have the character in situations where he has to pop his arm off to reach something, put it back on, take his head and lift it up to look around, because he doesn't have that flexibility."

The artists on the *Wings* complained that Lassa was a difficult character to rig and animate, because a teddy bear has very little anatomy. It's really just an oddly shaped pillow. Olaf has even less anatomy: he's three balls of snow with sticks for limbs.





Bill Schwab | Digital



Bill Schwab | Digital

John Lasseter is a big proponent of truth in materials. Olaf has sticks for arms, and he has sticks for eyebrows. How far can we push those shapes without the audience ceasing to believe they're sticks? It's a challenge for the people animating Olaf.

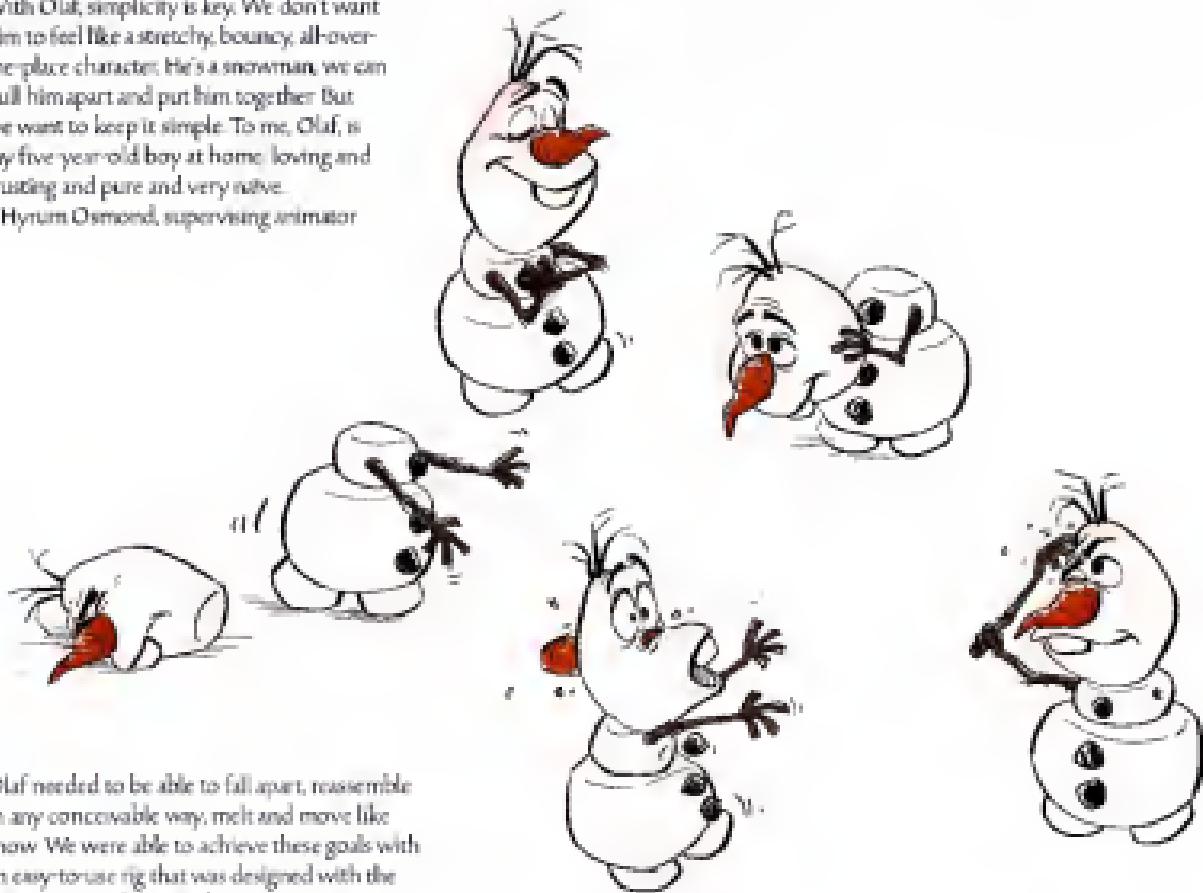
—Victoria Ying, visual development



Bill Schwab | Digital

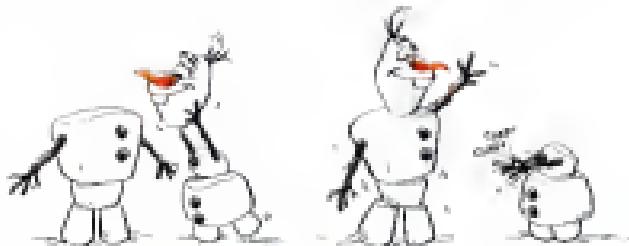
With Olaf, simplicity is key. We don't want him to feel like a stretchy, bouncy, all-over-the-place character. He's a snowman; we can pull him apart and put him together. But we want to keep it simple. To me, Olaf, is my five-year-old boy at home, loving and trusting and pure and very naive.

—Hyrum Osmond, supervising animator



Olaf needed to be able to fall apart, reassemble in any conceivable way, melt and move like snow. We were able to achieve these goals with an easy-to-use rig that was designed with the animators needs in mind.

—Matthew Schller, character technical director



How-nim Lee | © 2013

"Chris had some ideas about how he wanted Olaf and the other snowmen to look and move early on," says character rigging supervisor Carlos Cabral. "We'd never done a snowman. It required a lot of back-and-forth with animation: we would prototype something, they would test it, and Chris would ask, 'Can we see him come apart, or have his head fall off?' All the capabilities the animators wanted are in there to make him move and behave in ways humans and animals don't—and can't."

With his brittle chores and break-apart body, Olaf quickly became a favorite of the crew. Story artist Jeff Rango comments, "He's almost like a baby: he's just been created. He doesn't know that much about the world, so you have to explain things to him you take for granted, just as you would to a little kid."

"He's built in sections, so we play with him getting hit, like like 'Please Head,'" Rango continues gleefully. "You can rip his arm off, you can cut his head off, you can make a hole in him. He doesn't care. I love to torture Olaf, because he's a snowman. He doesn't feel pain; I can abuse him and get paid for it!"

"He feels quite a bit emotionally, but he doesn't feel pain," continues fellow story artist Normand Lemay. "So you can play with that and it's okay."

The animators can't wait for one of the high points of the film will be Olaf's song "In Summer," where he happily imagines himself "being whatever snow does in summer."

Lead editor Jeff Drakholm comments, "Once someone starts singing, you're breaking the bounds of reality. When Olaf sings about a snowman in summer, it's all in his head: we can have a snowman floating in the water. We can have a snowman sitting on the beach. I love the freedom of working on a musical."



Illustration | © 2013

"In Olaf's song, we change the look of the backgrounds to make them more Olaf-like," says McCormick. "It all takes place within the imagination of a strange little snowman. We figured that a lot of the shapes would be Olaf-like, that he would reduce his world to a more Olaf-friendly place."

Despite the challenges, John Lasseter sums up the consensus among the filmmakers when he says, "We have a brilliant character in Olaf. The animation of this guy is hilarious. One of the funniest songs I've ever heard is where Olaf, who's always so positive, sings about summer. It's wonderfully naive. It's the perfect blend of a great voice and writing that comes from the personality of the character."

In addition to its vague anatomy, Olaf posed another difficult problem: how to make a snowman stand out in a snowy environment. Layout supervisor Scott Beattie says, "We can make subtle differences of Olaf's texture, so he doesn't just blend in. And we rely on our friends in lighting to make him stand out."

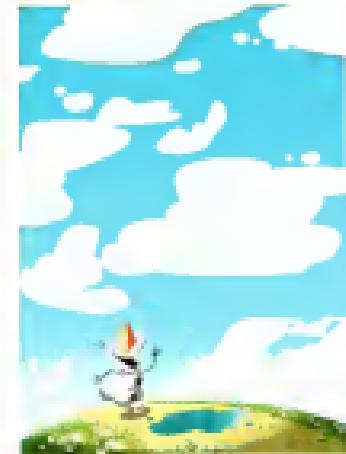
"We're going to push the lighting button," replies lighting supervisor Josh Staub with a roll of his eyes. "It's definitely going to be hard. We're going to have to make sure he separates from the background, using our traditional techniques of rim and bounce and things like that. But you don't want him to feel like an out-of-place to look like he belongs there."



Beth Schaefer | Disney



Eric Georges | Disney





Trolls

A series of hair-braiding escapades brings Anna, Kristoff, and Olaf to the realm of trolls. But these trolls aren't the dim brutes in the "Lord of the Rings" and "Harry Potter" books. They're magical creatures whose comic appearance hides their ability to discover the crush hidden in each character's heart.

"I love the trolls," says director Jennifer Lee. "With some encouragement from the songwriters, we convinced everyone they belong in the movie. It'll be a unique angle on *Trolls*."

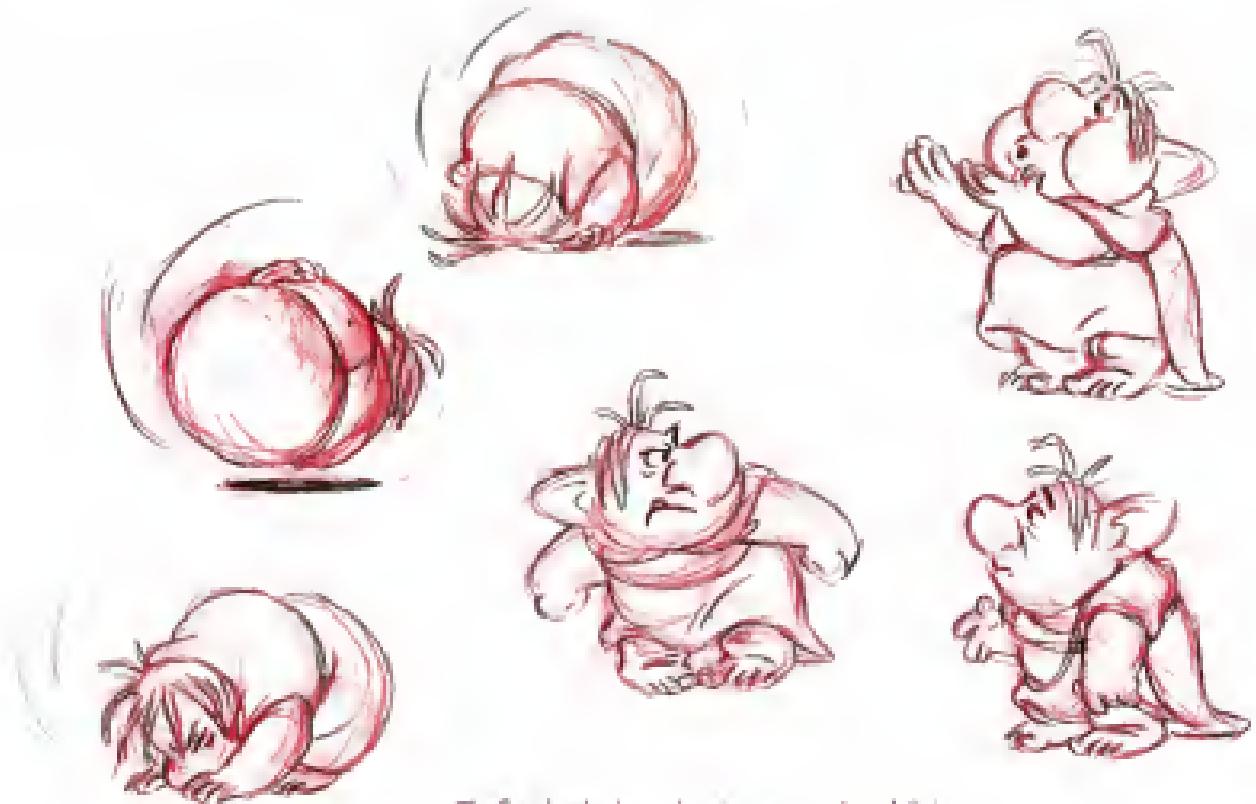
"You could easily put a bearded, hairy guy with a big nose in there and call it a day, but what is a Disney troll in this movie?" says supervising animator Malcolm Hause. "How do we make them special, and not generic? It's going to be a lot of fun to find that out in the animation, too. They offer the chance to do some pretty cartoonish and magical animation."



art by David J. Cogliandro







Dale (Inker) Pencil

The fine details play such an important role in defining the trolls. Interestingly these details on characters are generally the first to go in a crowd context—they're just not necessary. However we could not remove them as it took away too much from their unique character.
—Mac El-Ali, crowd lead



Rayman Origins

and the terrain, and mostly less in the 2002 game *Spores*. However, the plants in the 2005 game, *Agony*, still had living plant enemies, and the environment was full of living plants that could be harvested. Many years later, in 2011's *Plants vs. Zombies*, players could plant flowers in unpopulated cities, and these flowers would grow and spread, creating a green oasis. The original *Plants vs. Zombies* was a simple game of defense, but the numerous variants of *Plants vs. Zombies* have increased in complexity throughout. Plants are no longer just decorative rock crystals that absorb the sun's energy, but now because of their connection to the environment,



Rayman Origins



Jan Koen | Digital



Jan Koen | Digital



Jan Koen | Digital





Thor Valley
James Fisch | Digital



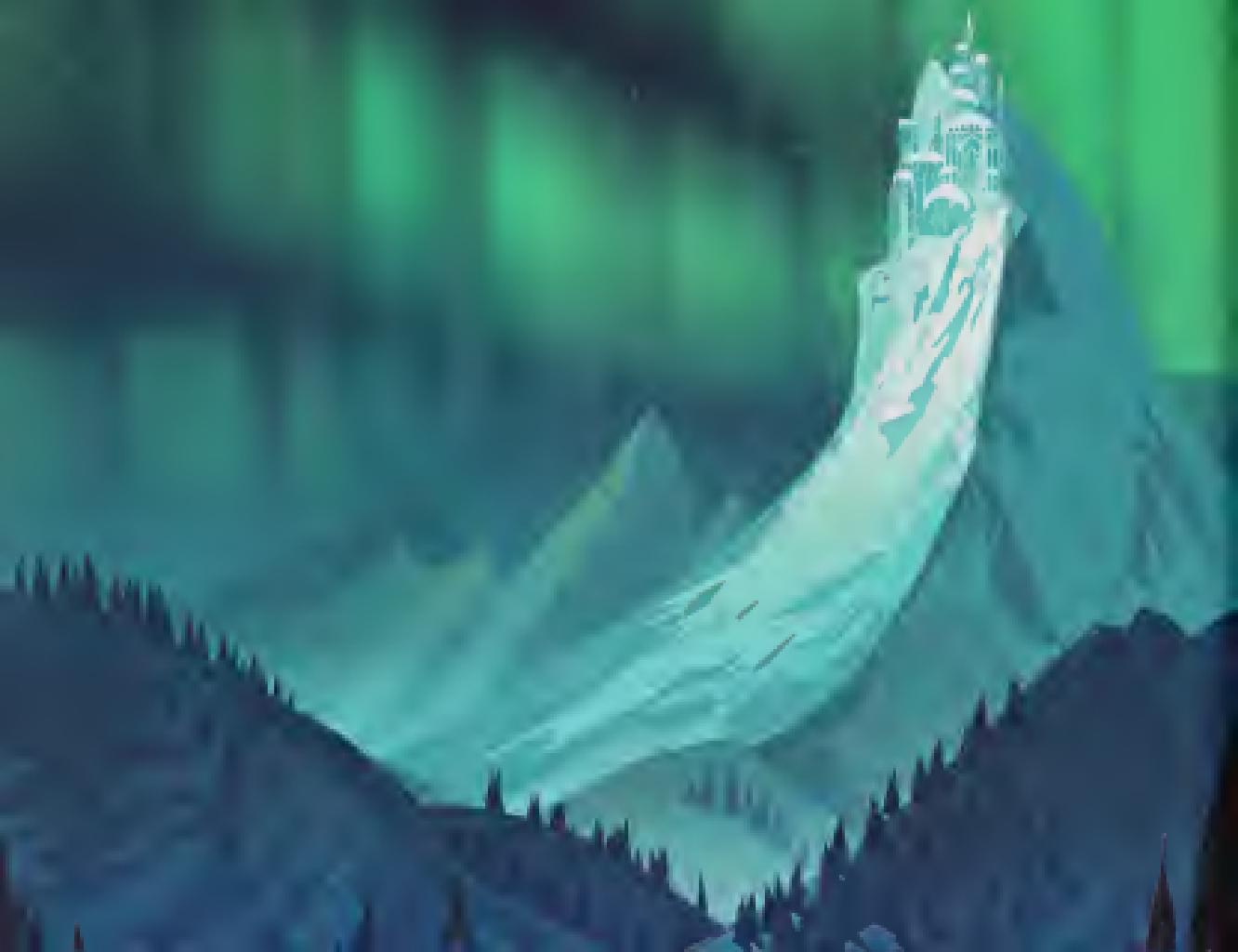
Front Valley

James Flock | Digital

My job is to make sure the background supports what's in the foreground, so we have a good balance of both.
—Jing Lee, visual development artist



James Flock | Digital





CHAPTER III

ICE PALACE

For Elsa's palace, we can model the ice, we can make it look like ice, it'll be all refractive, and it'll probably take the computers days to render. With ice, everything is shiny, sparkly. How do we make sure things don't get too active, and keep the audience looking at Elsa?

—Mohit Kolhupurkar, look and lighting director

Alone in the remote mountains beyond Arendelle, Elsa has created an ice palace: a glittering structure that rises around her. For the first time, she has a home suited to her, the Snow Queen.

One of the main challenges the artists faced was creating believable ice, which is more difficult than snow because it's optically active. Its colors can shift, according to what's around it; it can shatter light into rainbow highlights; it can appear almost perfectly transparent or completely opaque. Its surface may be glassy-smooth or etched with patterns. It can reflect its surroundings, or distort them like a fun house mirror. Ice isn't easy.



Following John Lasseter's insistence on research and truth in materials, the Disney artists took what he wanted to a crash course in meteorology. Effects supervisor Dale Mayeda recalls: "We had Dr. Kim Lippert, Doctor Bruce from Cal Tech, here to talk about the formation of snow crystals. There's so much amazing stuff about how snowflakes grow, down to the molecular level, that, of our pitch was that nothing ever morphs into a shape or wraps on... everything grows, as it does in nature. Things freeze in storms may assume lyrical shapes that look like something a sculptor created. By doing all this research, we're making magic out of things that actually happen in nature."

A trip to an ice hotel in Quebec City provided further inspiration for the palace. "They built this thing on ice pillars, and you had opaque snow sculptures with a framework of transparent ice and reflective ice pillars for the whole interior, and some of the exterior walls as well," says production designer David Womarley.

"During the day, the base's so naturally, so you can see the natural qualities of the ice and the snow as light goes through them," adds associate art director Lisa Krome. "But at night, it's a light show. In the day, they have two or three different colors that they'd fade out, then a new set would come on. It really messed with your depth perception, because it's basically a white and shiny room, but depending on the value of the light, the space would seem to change."

Although the artists agree that having a drink in the bar was enjoyable and instructive, they declined to spend a night in the hotel's night rooms. Seeing a real ice structure helped them to imagine a grander palace.

The ice is going to be a challenge, because it provides a lot of activity, perhaps in areas that you might not want. It's so striking and beautiful, like a roomful of diamonds, as an audience you're going to want to look at it. We have to control it so it's always directing your eye the way we want you to look.

—Lisa Krome, assistant art director



David Wiesenthal | Digital



David Wiesenthal | Digital



photo: courtesy of DreamWorks Animation

"There's ice that's clear and very reflective, and there's ice that has frost on it, through which you see nothing," comments visual development artist Jim Ries. "We'll have areas we want clear, so the audience can see distorted images or reflections. There'll also be frosted parts we don't want the viewer to see through. Sometimes it depends on how cold we want it to be. When it's cold, you don't see reflections; it's going to reflect the story and how we want it to feel."

The real properties of ice and snow are ultimately less important than how they can be used to advance the story. Visual development artist Cory Loftis adds, "We have normal ice, just like we have in the real world, then there's that

magical ice. There are two different sets of shapes and colors. Deep ice has really strong blues as opposed to thin ice, which is grays and whites. I focus on the colors and the shapes more than the physical properties of ice."

As Loftis notes, there had to be natural ice and magical ice, but both had to appear equally believable. To keep the audience in the world of the film, the artists (let's say) had to avoid effects that felt too familiar.

"Michael Giacchino and I didn't want to have that 'Christmas special snow,' where a giant snowflake wipes the screen," says effects artist Dan Land. "Snowflakes are beautiful, but unless you zoom in, you never see them. We use



Ni. Park | Digital

It's fascinating to see how beautiful snowflakes are. If you look at the interior, the floor, and the columns, the ice castle is all based upon the science of snowflakes.
—John Lasseter



In a live action film, you may have real snow falling on a real actor, and there's believability right off the bat. We're taking believability one step further away by having characters break into song, and build palaces. It demands a higher level of believability, not reality, so that the singing and dancing doesn't take you out of the story. You would think it would be liberating, but it's a bigger hurdle; it makes believability that much more important.

—Marlon West, effects supervisor

Kevin Kallaugher





Julia Katsenbach | Digital



Julia Katsenbach | Digital

the negative and positive space of snow flurries to create snowflake shapes, we also came up with the idea of having Elsa have a signature snowflake shape. If you saw it anywhere in the movie, you'd know it wasn't nature, it was her."

"Usually effects are just applied to the film at a specific point," he continues. "But after Miles talked about what he hoped the film could be, we came up with effects that had a beginning, a middle, and an end; it felt more like you were pitching a story point than just an effect. That was pretty exciting."

Effects supervisor Matt West adds, "There's been plastic plate dust there's been characters like those in *The Incredibles* who shoot snow out of their hands. We didn't want to imitate something that's been done, but we have to be on the same page with our character animators. Elsa's not shooting ice out of her hands. She's creating things from the particles in the air. What you see on screen is the result of her magic, not the actual magic."

"Whatever those *Sleeping Beauty*-style sparkles make you feel, I hope you feel it again when you see this stuff," counters Lund.

McMurtry stresses that the palace itself reflects Elsa's personality and shifting mood: "In Elsa's song, she goes from being angry and aggressive to more content and lyrical, she's gone to the top of the mountain; she's free to be her real self. Her initial reaction may be aggressive, but once she feels content, the ice and snow structures she creates will become more sculptured."



Whitney Lee | Digital

Having these visions appear on the screen would require hours of rendering time, lighting supervisor Miles Klem sighs. "The ice palace is going to be a major challenge for us, since refractive objects take a really long time to render in CG. How we're going to light it is another challenge, because it's clear ice. How does it reflect the light?"

"Hopefully we'll find a way to bend the rules of physics so we have a rich, believable world that the viewer feels is ice, but without paying the freight for physical accuracy," adds lighting supervisor Jason Madnick. "The computer offers the ability to pick and choose from the rich complexity of the natural world."



David Witemeyer (Digital)

John Lasseter's objective for the ice palace was to make it a celebration of the hexagonal [ice] crystal. Disney's ice sculpture exploded this concept with all the interior architectural elements.

LookDev was faced with the challenge of realizing the looks for snow, ice, and the combo of snow and ice. There are so many aspects to the looks as well, such as geometric snow next to pointed snow, snow shapes, and snow sparkles. We wanted to make sure the look was stable, renderable and art-directionable
—Hans-Jörg Klem, look development supervisor



Disney Consumer Products



Victoria Ying | Digital



Victoria Ying | Digital



Julia Makarenko | Digital



Wei Cheng | Digital



Wei Cheng | Digital

They spent a lot of time looking at snowflakes before we even started on the movie. Elsa's magic ice follows those snowflake patterns, but on a much bigger scale. The way it grows is less chaotic and more melodic or rhythmic.

—Cory Lofin, visual development artist



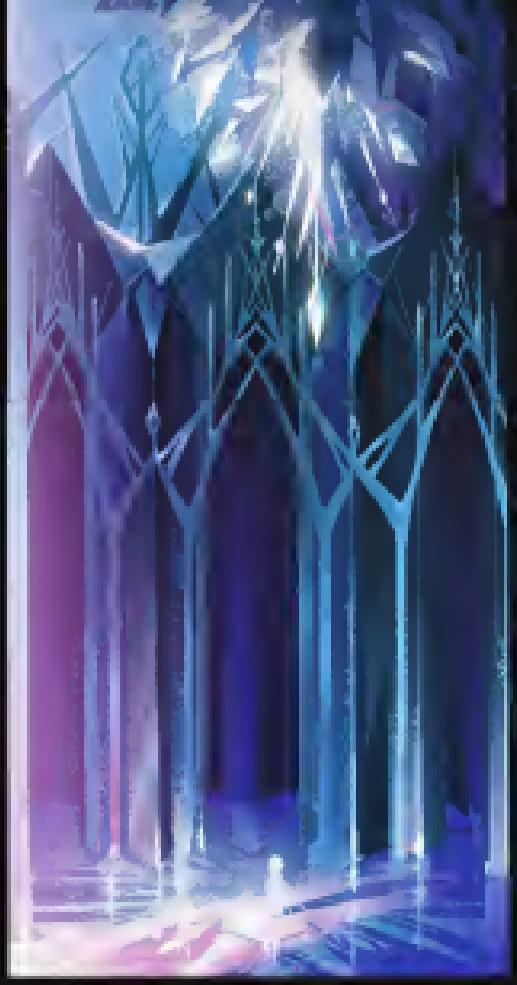
Dana Koenig | Digital



Dana Koenig | Digital



David Thompson | Digital



Anthony Lau | Digital



Lisa Keeler Digital

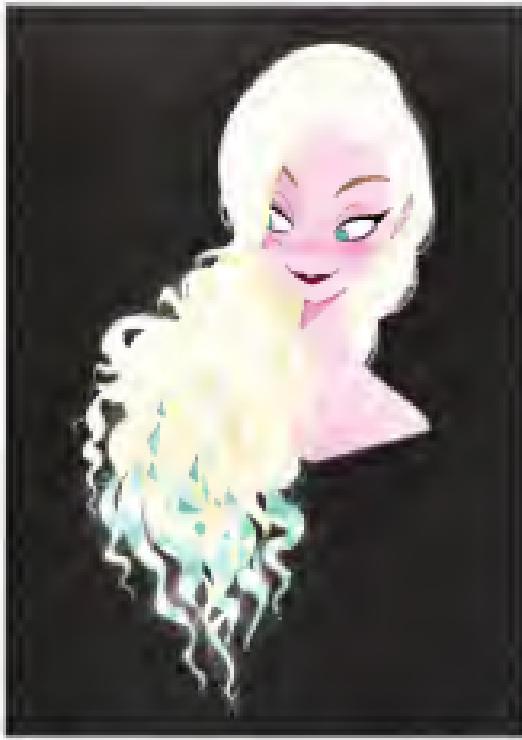
John Lasseter's directive for the ice palace was to make it a celebration of the hexagon motif found in all snowflakes. Britney Lee beautifully exploited this conceit with all the interior architectural elements.

—Michael Giammo, art director





©2013 Scholastic Inc.



©Disney/Lorelai Digital

For Elsa's cape, they want to have a crisp, almost unrealistic triangle shape to it. Gravley would probably dip the cape down, but they want to retain it. The question is, can we pull that off and not have it feel distracting.
—Wayne Unten, supervising animator

I had worked with Jin Kim on *Tarzan*; his draftsmanship is just gorgeous. He's done a lot of character designs, doing some beautiful drawings, then giving them to the CG animators or the modelers so that they can get the appeal of the hand-drawn

—Chris Buck, director



©Disney/Lorelai Digital



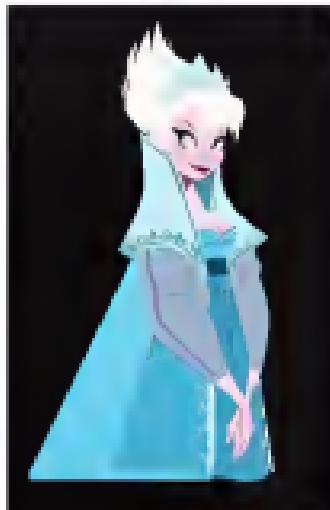
Michael Glance (Obj/Al)



Christine Keenan (Obj/Al)



Christine Keenan (Obj/Al)



I love Elsa, because we can make her cold and distant, but our hearts will still go out to her. We'll know she's living in a prison she can't share with anybody. There are some pretty deep themes that come with not being able to admit who you are for fear of how people will react.

—Chris Williams, story artist



Michael Giacomo used the word *panache* to describe the design sense on *Frozen*, and that's Elsa to a T, stylish, original, and confident. From the column dress complete with leg slit and train, to the ethereal frost cape that needed to be magical yet believable, to her gorgeous almost flame-licked hair, Elsa makes a statement. She embodies many of the challenges for simulation team *Frozen*. Strong sleek shapes, that have purpose and clarity and motion, while accenting and supporting the characters physical and emotional performance.

—Keith Wilson, sim lead





Chloe Keehan (Anna) / Jessie (Elsa)

I draw from all the fights my sisters had.
—Hyunum Osmond, supervising animator



Hyunum Osmond (Anna)

Rigging both Anna and Elsa presented a unique challenge as both the film's heroines and also as sisters. They both shared a high level of performance and appeal, and yet each sister required subtle refinement to ensure their distinctive personalities emerged.
—Joy Johnson, character technical director



Hyunum Osmond (Elsa)



Bill Schaefer | Digital



Chris Keene | Digital



Monica King | Digital



Brigitte Wilcox | Digital



Monica King | Digital

Marshmallow



Modeling characters at Disney has always been a challenge. Modeling characters on *Frozen* like the snow monster was no exception. How do the icicles penetrate into the snow? How hard do we make the edges and plan breaks so they light correctly? How do we prevent this guy from feeling like he was wearing a rubber suit? We must have modeled at least four different monsters before landing this guy. Luckily here at Disney we have some of the best artists in the biz so I'm confident he will put the scare into all the kids watching.

—Chad Snubblefield, character modeling supervisor



Bill Schenck | Disney







CHAPTER IV

RETURN TO ARENDELLE

One of the unique things about the Walt Disney Animation Studios is you have under one roof brilliant hand-drawn animators and artists, and brilliant computer animators. They work together as a team. We've done a lot of development with drawings, the same way we develop a story with drawings.

—John Lasseter, Pixar/Disney chief creative officer

Believing Elsa's plot to seize the throne of Arendelle brings Anna and Elsa together, love and respect triumph over years of isolation and misunderstanding. For the first time since they were little girls, they can share a joyous moment at the skating rink—joined by Olaf, Sven, and Kristoff. Their adventures bring the mountain men and the princess together, despite expectations that Hans was the perfect man for her. The artist symbolizes the sisters' renewed bond with a comic that is half wood and half ice.

Everyone involved in Frozen stresses that the film is a musical, not just a film with songs. Walt Disney's initial animated features were musicals, and a second series of musicals, *The Little Mermaid*, *Beauty and the Beast*, *Aladdin*, and *The Lion King*, marked the studio's renaissance of the late 1990s/early '00s.



David Mervin/Disney

"Once Chris said he wanted to enhance the musical [parts], it gave me more liberty with the environment, characters, and costumes," says art director Mike Gazzo. "Eyebrows were needed at some of the color choices, but they help suspend disbelief. They let the audience know right away that this is going to be a magical, musical world, so even the most jaded four-year-old will suspend their disbelief."

"I did a lot of research in terms of cinema, choreography and [found] several musicals that inspired me in terms of how the combination of environment, characters, movement, and music worked in harmony," he continues. "The sound of music bears a close relationship to our environment; of mountains, water, and blue skies. Robert Wise took the city of Salzburg and created an ecosystem blocking the characters in *Sound of the Roof*; the environments breathe. Since we're dealing with the wide screen on this show, the camera is most effective when you let them breathe."

Director Chris Buck adds, "I thought when I was writing the movie with music... I'm hoping the audience is still there for a great musical, using the most emotional, the most



Monica Loo/Disney

dramatic, the most fun sequences in a movie will be the songs. If we make a great movie with great songs, the audience will enjoy it no matter what they call it."

Bobby Lopez, who wrote the hit musical *The Book of Mormon*, and Kristen Anderson-Lopez, who wrote with him the songs for Disney's *Mulan* and *Pooh* (2002), collaborated on *Frozen*. Buck says, "Bobby and Kristen have a very strong story sense. We may have thought, 'we'll play songs here and here and here,' but it was a lot harder to make the songs part of the structure and not just songs where you stop and sing."

Although John Lasseter didn't work on the *Ash men-Idiomen* musicals at Disney, he stresses that a good song can provide concise, emotionally resonant storytelling. "A song that would become tedious in exposition can be neatly presented through a song."

"Sometimes in a musical, you can stop the plot and capture an emotion with a song," adds Chris Buck in *Brave and the Beast*; Lasseter says, "At other times, you can really see a character develop. It's a song 'Let It Go' is just remarkable,





James Routh | Digital



James Routh | Digital

In the normal winter, you'll have a lot of snow forms. But the harsher Elsa-caused winter is going to have frozen fjords and more extreme forms of ice. We're looking at some of the Great Lakes lighthouses when they get continually sprayed, ice forms on top of ice, and you get these really bizarre-looking almost ice sculptures.

—David Womersley, production designer



and Idina Menzel's performance is breathtaking. It would have been completely unacceptable to have a character change that much in a nonmusical setting in that amount of screen time."

When the new Disney musicals became big box office hits, other studios tried to copy the model. The result was a spate of unscripted films where the plot halted, a character sang, and the filmmakers tried to pick up the story.

"By the time the song came, you felt like you'd already heard it," observes producer Peter Del Vecho. "Other studios assumed, you write a song, you put it in the movie, and it's a musical. The only way a musical works is if the songs heighten the emotional beats in a way that grows organically out of the story. Several songs written for *Frozen* were great songs, but they didn't fit into the movie, so they're gone. Similarly, there are sequences we wrote and heard that ultimately don't serve the needs, so we jettisoned them."

"We're on a video conference call with Bobby and Kristen every day, talking about story—not talking about songwriting, but story," he emphasizes. "They won't write a song until they understand where the story is going. It has to be a continuation of the plot and convey something in a way dialogue can't."

Certain songs are more about a lyrical camera movement, as opposed to one we might do like a Broadway show and not move the camera around much. We're trying to let the songs dictate that. *Tangled* was more of a movie with songs, so we're going take this one to the next level.
—Scott Beattie, layout supervisor

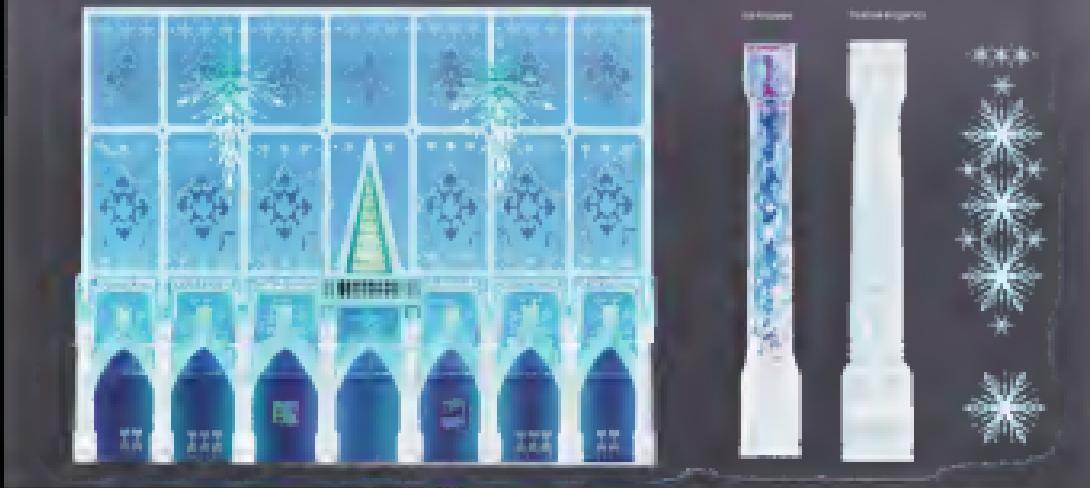




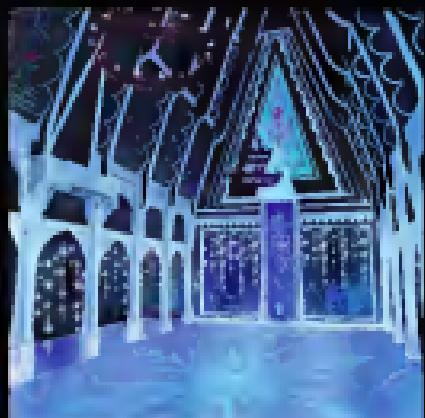
close day just
before freezing



Anna's blue eyes start to freeze.
Elsa's magic blues to freeze the skin.
As the pixels melt away and nothing
can freeze to her skin blues.



james Finch | Digital



james Finch | Digital



james Finch | Digital

Director Jennifer Lee adds, "When we put up a screening, if we don't have a song, we storyboard it with narration, rather than trying to write a scene to replace it."

The Pixar artists had to construct a film where it felt natural for the characters to sing, as they had in *Pinocchio* and *Lady and the Tramp*. Story artist Jeff Kurja comments, "I like songs because there's a structure; you feel the rhythms and the movement, and you try to match the visuals to the musical piece. With a scripted scene, there's an audience and director, but with music, it's more, 'What does this passage feel like? What's it going to look like in the movie?'"

Follow story crew member Monique Lemay adds, "The songs are never going to stop this movie. It's almost as if the regular, real-time sequences are bridges to the songs."

But story artist Chris Williams cautions that a song sequence requires careful analysis: "You have to ask, 'Is the character actually singing in the reality that we've established? Is the character singing to herself, to other characters, or to the audience?' There's all these ways you can go."

Like most studio animated features of recent years, *Frozen* would be released in 3-D in many theaters. Although computer animation creates a three-dimensional world, release in the popular format required careful planning. Story artist John Kaja comments, "The 3D film in 3-D where a character essentially says, 'I've got my SPARK and I'm poking it towards the camera!' It feels like a gimmick that pulls you out of the movie. The woods and mountains are going to add to the 3-D."

Head of story Paul Briggs agrees that 3-D will enhance the beauty and the immersiveness of the snowy environment of the film: "I never think about 3-D while I'm boarding, but sucking the viewers into the film's environment is going to be really important. Immersing viewers in the blizzard at the end of the film will give them a sense of the struggle the characters are going through. It's not just a gimmick."

Creating snowstorms that were believable and carried the emotional impact Briggs describes was the job of the visual effects department. Effects supervisor Marion West contrasts the challenges of creating 3-D snow with similar effects in 2D animation: "In 2-D, we set about layers, things in front of and behind each





either. In stores, the layers really have to integrate in 3-D. It would be a layer of snow in front of the camera, or a layer of snow behind the characters. In this film, they're going to be immersed in snow."

"With 3-D, you have to make it spatially correct, otherwise as soon as the viewers put on their glasses they see the tricks," adds fellow supervisor Bob Mayeda. "Especially with snow, which gives you ten thousand visual cues of depth at every point on the screen."

Of all the challenges the artists faced on *Frosty*, perhaps the most daunting was the time in which it had to be made. The crew "cracked" the story in November 2011, barely a year before the film was slated for release. Some of the best-loved animated films of recent years were completed on short schedules, notably *Toy Story*, *Brave*, and *Tangled*. Some artists feel a lack of time forces them to concentrate harder, to trust their initial impulses and avoid overthinking, but a short schedule also means less nights, overtime, and stress.

"We originally were slated for 2014, but we were asked if we could hit the fall of 2013, stat," Buck explains. "The studio has had many movies that felt like we'd never finish them on time, but we did. I'm excited; a little bit nervous, but excited."

"Having tight deadlines can stimulate creativity; it gives you a focus that you don't have with the luxury of time," adds Dan Vetro. "But you want your story to be at a certain place before you start production; when you truncate the schedule, you overlap them. Fortunately, pace is very strong in story, editorial, and art. Chris is very strong in production. Although they work closely together, when we need to keep things moving, we are divide and conquer."

Buck sums up the attitude of the Pixar artists when he concludes, "I believe in the film. What you're working on something that's really emotional and powerful, it's inspiring. You get it done because you know it's going to be great."

I can't think of a film I've worked on where everybody just chilled out while they worked. Even if we had two more years, we'd still be stressing about shots. It's what we signed up for when we wanted to be filmmakers.

—Dan Lund, visual effects supervisor

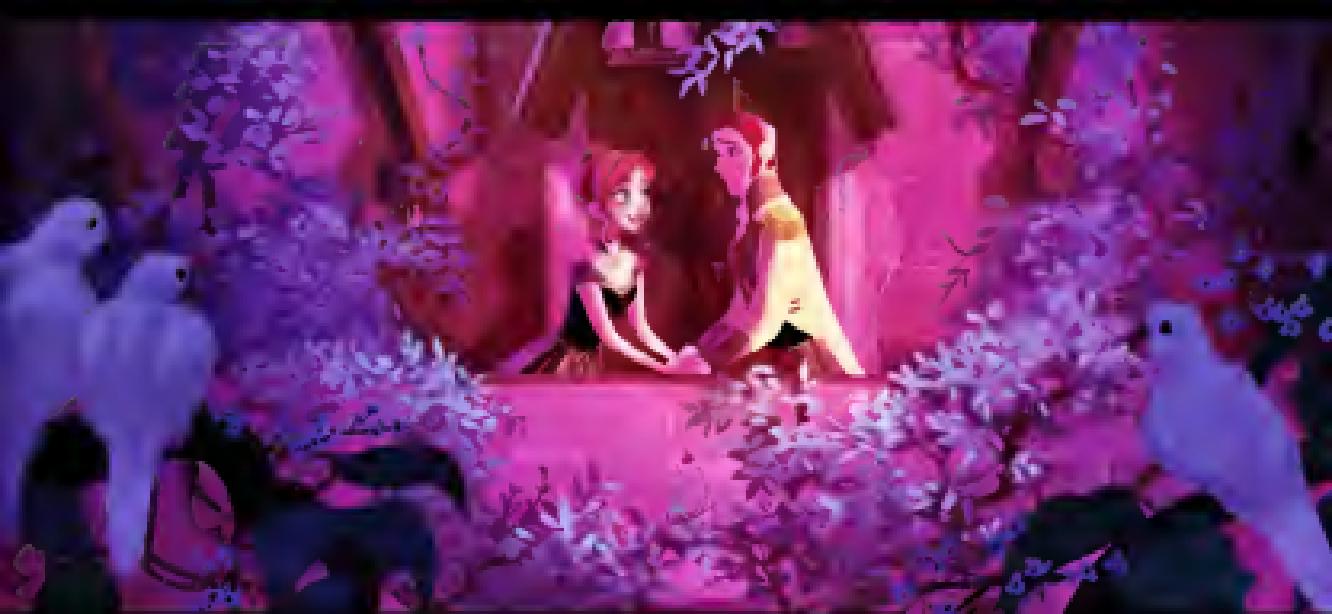




Gary Little Digital



Gary Little Digital



Copyright Disney

Disney does musicals best. We haven't done a singing musical in a while, so it's time to get back in there. It's easier for an audience to accept characters singing in a Disney movie. It's artificial, but in this world, you almost expect people to start singing.
—Jeff Ranjo, story artist



David Waterhouse | 10x14

